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VASCULAR DISEASE

INCREASED VASCULAR STIFFNESS IS ASSOCIATED WITH THE PRESENCE AND SEVERITY OF CORONARY ARTERY DISEASE

ACC Poster Contributions
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Background: Previous studies demonstrate that vascular stiffness measured by pulse wave velocity (PWV) is associated with cardiovascular risk factors. This study evaluates whether increased PWV is associated with the presence and severity of computed tomography angiography (CTA) diagnosed coronary artery disease (CAD).

Methods: This study consists of 131 consecutive subjects (age 59±11 years, 72% male) who underwent CTA. Carotid-radial PWV was measured using SphygmoCor tonometery (Atcor Med., Australia) and calculated as: the ratio of distance over time between blood velocities of carotid to radial artery (m/sec). Coronary artery calcium (CAC) was defined as 0, 1-100, 101-400 and 400+. CAD was defined as normal, 1-49%, and 50%+ luminal stenosis.

Results: PWV increased proportionally with the presence and severity of CAC. Similarly, PWV increased from normal coronaries to diseased coronaries.(Figure) After adjustment for risk factors, the risk of each 1 m/s increase in PWV was 2.49 (95% CI 1.52-4.11, p=0.0001) for non-obstructive CAD and 4.32 (95% CI 2.01-9.28, p=0.0001) for obstructive CAD as compared to subjects with normal coronaries. The area under ROC curve to detect significant CAD was 0.74 for PWV, 0.81 for CAC, and 0.87 for the combination.

Conclusion: Increased PWV is associated with the presence and severity of CTA diagnosed CAD independent of age, gender, and cardiovascular risk factors.